Thermal Performance of the Exterior Envelopes of Whole Buildings XIII

Clearwater Beach, FL ❖ December 4-8, 2016

air barrier abaa association of america

ARMATHERM™ THERMAL BREAK SOLUTIONS

OWENS CORNING

DUPONT Tyvek

BUILDINGS XIII CONFERENCE

PROGRAM

Thermal Performance of the
Exterior Envelopes of Whole Buildings XIII

December 4-8, 2016

	Sunday, December 4			
7:30 am	**Continental Breakfast Available, Lobby II**			
*8:00 am – 12:00 pm	**Workshop 1** Performance of Air Barrier Systems, Part 1 *Ballroom – Beach*	**Workshop 2** Thermal Mass, Part 1 *Ballroom – Gulf*	**Workshop 3** Heat and Moisture in Buildings *Ballroom – Palm*	**Workshop 5** How to Evaluate the Risk of Mold Using the Mold Growth Index *Ballroom – Bay*
12:00 pm	**Lunch (on your own)**			
*1:00 pm – 5:00 pm	**Workshop 1** Performance of Air Barrier Systems, Part 2 *Ballroom – Beach*	**Workshop 2** Thermal Mass, Part 2 *Ballroom – Gulf*	**Workshop 4** Insulation Materials and Systems *Ballroom – Palm*	**Workshop 6** Probability Assessment of Performance and Cost (RAP–RETRO) *Ballroom – Bay*
6:00 pm	**Reception, poolside (weather permitting):** Hosted by Sheraton Sand Key			

**Refreshments served at 10:00 am and 3:00 pm*

	Monday, December 5	
7:30 am	**Continental Breakfast Available,** Lobby II	
8:00 am – 8:30 am	**Welcome Session,** Grand Ballroom **Marc LaFrance,** DOE - **Patricia Graef,** ASHRAE - **Theresa Weston,** NIBS	
8:30 am – 10:00 am	**Plenary Session,** Grand Ballroom **William Rose** — A building science to-do list **Carl-Eric Hagentoft** — Trends and challenges in building physics during the last 30 years: A Swedish perspective	
10:00 am	**Break (refreshments served),** Lobby II	
10:30 am – 12:00 pm	**Session 1**	
	Ballroom – Beach/Gulf	*Ballroom – Palm/Bay*
	PRACTICES: Attics ***Chair: David Roodvoets*** Field measurements of moisture in cold ventilated attics with different types of insulation and vapor barriers **Thor Hansen – Paper #45** Monitoring of two unvented roofs with air-permeable insulation in Climate Zone 2A **Kohta Ueno – Paper #99** Cost-effective, high-performance unvented attics **Francis Babineau – Paper #103**	**PRINCIPLES:** Insulation Performance and Material Properties ***Chairs: Andreas Holm and Manfred Kehrer*** Wind-washing effects on mineral wool insulated sheathings **John Straube – Paper #67** Improving polyiso thermal performance at low temperature **John Letts – Paper #159** Determination of linear thermal transmittance of vacuum-insulation panels by measurement in a guarded hot-plate apparatus or a heat-flow meter apparatus **Christoph Sprengard – Paper #17**
12:00 pm	**Lunch (on your own)**	

Residential

Commercial

	Session 2	
	Ballroom – Beach/Gulf	*Ballroom – Palm/Bay*
1:30 pm – 3:00 pm	**PRACTICES:** Heritage & Retrofit Considerations for Buildings ***Chair: Kim Pressnell*** Refurbishing heritage and historic buildings: Key motivations, benefits and challenges **Torben Valdbjørn Rasmussen –Paper #4** Treatment of rising damp in historic buildings using a wall based hygro-regulated ventilation system: Case studies **Vasco Peixoto de Freitas – Paper #34** The impact of window-to-wall ratio on energy intensity of existing commercial buildings in Ontario and Quebec **Viktoriya Mykytyak – Paper #56**	**PRINCIPLES:** Walls – Moisture and Durability, Part 1 ***Chair: Diana Hun*** Using fiber insulation as a means of drying internally insulated walls **Kim Pressnail – Paper #1** A public domain, transient, experimental database on the hygrothermal performance of durable, energy-efficient, full-basement foundation walls in a cold climate **Louise Goldberg – Paper #13**
3:00 pm	**Break (refreshments served), Lobby II**	
	Session 3	
	Ballroom – Beach/Gulf	*Ballroom – Palm/Bay*
3:30 pm – 5:00 pm	**PRACTICES:** Taking Stock ***Chair: Wahid Maref*** Field demonstration of an attic retrofit strategy using cellulose insulation and phase change material **Kaushik Biswas – Paper #26** Evaluating summertime overheating in multi-unit residential buildings using survweys and in-suite monitoring **Ekaterina Tzekova – Paper #19** Online airtightness savings calculator for commercial buildings in the US, Canada and China **Diana Hun – Paper #39**	**PRINCIPLES:** Material Durability ***Chair: Mikael Salonvaara*** Critical property contrasts of fluid-applied air- and water-barrier membranes used for envelope: Chemistries, performance and durability **Patrick Young – Paper #46** Critical freeze-thaw saturation measurement of in-service masonry **Randy Van Straaten – Paper #97** Field study of moisture storage and thermal properties of buried extruded polystyrene **Leslie Peer – Paper #149**
5:00 pm – 7:00 pm	**Social Activity: Reception, poolside (weather permitting)** Privately Sponsored by the Air Barrier Association of America (ABAA)	

Tuesday, December 6

8:00 am — **Continental Breakfast Available, Lobby II**

8:30 am – 10:00 am — **Special Presentation, Grand Ballroom**

Marc LaFrance—US DOE Building Technologies Office Multi-year Plan and International Perspectives

Sam Rashkin—A Common Agenda for Getting to Zero

Eric Werling—Coming Soon: DOE's New Building Science Advisor, a Web-based Design Tool to Help Manage Moisture Risks in Walls

10:00 am — **Break (refreshments served), Lobby II**

10:30 am – 12:00 pm — **Session 4**

Ballroom – Beach/Gulf	*Ballroom – Palm/Bay*
PRACTICES: Air Tightness in Buildings ***Chair: Laverne Dalgleish***	**PRINCIPLES:** Walls – Moisture and Durability, Part 2 ***Chair: Fitsum Tariku***
Commercial building airtightness testing: Lessons learned from the Red River College airtightness testing program **Gary Proskiw – Paper #24**	Protocol to evaluate the moisture durability of energy-efficient walls **Philip Boudreaux – Paper #38**
Impact of large building airtightness requirements **Lorne Ricketts – Paper #16**	A systematic method of assessing the durability of wall assemblies: Towards the limit-states design approach **Martin Morelli – Paper #91**
Air sealing tight commercial and institutional buildings **Dave Bohac – Paper #129**	Risk of condensation and mold growth in highly insulated wood-frame walls **Hamed Saber – Paper #109**

12:00 pm — **Lunch (on your own)**

Session 5

Ballroom – Beach/Gulf	Ballroom – Palm/Bay
PRACTICES: Ventilation and Air Movement ***Chair: Alex McGowan***	**PRINCIPLES:** Attic and Roof Performance ***Chair: Bill Rose***
1:30 pm – 3:00 pm Practical applications and case study of temperature smart ventilation controls **Michael Lubliner – Paper #82**	Sealed attics exposed to two years of weathering in a hot and humid climate **William Miller – Paper #11**
Smart ventilation control of indoor humidity in high performance homes in humid U.S. climates **Brennan Less – Paper #87**	Field study on the thermal and hygrothermal performance of insulated, ventilated nail base system **Ming Shiao – Paper #12**
Measured commercial and institutional building pressures **Dave Bohac – Paper #130**	Annual energy and heat flows in vented and sealed attics: Parametric study – climate zone 2A **Mikael Salonvaara – Paper #137**

3:00 pm — **Break (refreshments served), Lobby II**

Session 6

Ballroom – Beach/Gulf	Ballroom – Palm/Bay
PRACTICES: Horizontal Envelope Assemblies ***Chair: Mike Ennis***	**PRINCIPLES:** Indoor Environmental and Thermal Comfort ***Chair: Stanley Gatland***
3:30 pm – 5:00 pm Innovative roof design for passive low-income housing in western India **Leon Glicksman – Paper #5**	Performance factor for floor heating systems using new analytical formula **Carl-Eric Hagentoft – Paper #30**
Vegetative roof performance during summer: Critical analysis of the irrigation effect **S. de Freitas – Paper #35**	Measured differences of ground and space temperatures for side-by-side slab on grade residences with and without carpet **Robin Vieira – Paper #71**
Effective floor cavity and knee wall construction techniques in two-story homes in hot climates **Chuck Withers – Paper #70**	Characterizing indoor humidity for comparison studies: The moisture balance approach **William Rose – Paper #120**

5:00 pm – 6:30 pm — **Workshop 7**
(Free event)
Building Science Education Update
Ballroom, Beach

6:30 pm – 8:30 pm — **Social Activity: Reception, poolside (weather permitting)**
Privately Sponsored by Armatherm™

Wednesday, December 7

8:00 am — **Continental Breakfast Available, Lobby II**

8:30 am – 10:00 am — Session 7

Ballroom – Beach/Gulf	*Ballroom – Palm/Bay*
PRACTICES: High-Performance Insulation Systems ***Chair: Diana Fisler***	**PRINCIPLES:** Rain ***Chair: Hugo Hens***
Method to evaluate and develop next generation vacuum insulation panels for implementation in the retrofit of existing building envelopes **Kyle Vansice – Paper #52**	Analysis of wind-driven rain exposure based on long-term monitoring **Fitsum Tariku – Paper #78**
Development of high performance composite foam insulation with vacuum insulation cores **Kaushik Biswas – Paper #64**	Laboratory study of rates of inward leakage in seven different gaps in a façade exposed to driving rain or water splash **Lars Olsson – Paper #126**
Field demonstration of superior performance of advanced building technologies **Nitin Shukla – Paper #153**	

10:00 am — **Break (refreshments served), Lobby II**

10:30 am – 12:00 pm — Session 8

Ballroom – Beach/Gulf	*Ballroom – Palm/Bay*
PRACTICES: Insulated Assemblies ***Chair: Patrick Roppel***	**PRINCIPLES:** Intentional and Unintentional Airflow ***Chair: Chris Schumacher***
Thermal and moisture performance of buried ducts **Achilles Karagiozis – Paper #136**	Duct-leakage repeatability testing **Iain Walker – Paper #27**
Field test on two interior insulation systems with large thickness: Influence of orientation and airtightness **Mario Stelzmann – Paper #60**	Airflow through lightweight wall assemblies: Influence of size and location leakages **Philipp Kolsch – Paper #58**
Determining the performance of an exterior continuous insulation wall assembly **Jonathan Smegal – Paper #145**	Simulating air leakage in walls and roofs using indoor and outdoor boundary conditions **Simon Pallin – Paper #115**

12:00 pm	**Lunch (on your own)**	
1:30 am – 3:00 pm	**Session 9**	
	Ballroom – Beach/Gulf	*Ballroom – Palm/Bay*
	PRACTICES: Hygrothermal Performance and Durability ***Chair: David Yarbrough*** Comparison of measured hygrothermal performance of wood frame walls built with continuous exterior insulation **Gary Parsons – Paper #23** Measured and predicted moisture durability performance of high-R wall assemblies in cold climates **Trevor Trainor – Paper #84** Field evaluation of thermal and moisture response of highly insulated wood-frame walls **Michael Lacasse – Paper #96**	**PRINCIPLES:** Thermal Performance and Thermal Bridging ***Chair: Jan Kosny*** Potential and limitations of infrared thermography on unventilated walls **Katrien Maroy – Paper #158** Thermal analysis of curtain wall systems: A parametric study **Nathan Van Den Bossche – Paper #55**
3:00 pm	**Break (refreshments served), Lobby II**	
3:30 pm – 5:30 pm	**Session 10**	
	Ballroom – Beach/Gulf	*Ballroom – Palm/Bay*
	PRACTICES: Performance of Wall and Glazing Systems ***Chair: David Kayll*** Window condensation: Theory into practice **Alex McGowan – Paper #8** Thermal performance evaluation of walls with gas-filled panel insulation **André Desjarlais – Paper #92** Demonstration and evaluation of low-e storm windows and advanced window coverings in the PNNL lab homes **Joseph Petersen – Paper #142**	**PRINCIPLES:** Innovative Approaches ***Chair: Carl-Eric Hagentoft*** Alternative core materials for vacuum insulation **Boyce Chang – Paper #54** Big- area additive manufacturing applied to buildings **Kaushik Biswas – Paper #83** Economic efficiency of thermal insulation aimed at saving energy: A critical assessment **Andreas Holm – Paper #124**
6:00 pm	**Conference Dinner, Island Ballroom** Marc LaFrance, DOE Opaque Building Envelope Activities	

	Thursday, December 8	
8:00 am	**Continental Breakfast Available, Lobby II**	
8:30 am – 10:00 am	**Session 11**	
	Ballroom – Beach/Gulf	*Ballroom – Palm/Bay*
	PRACTICES: Assessment of Heat and Moisture Flow ***Chair: Brian Stroik*** Evaluation of a modified co-heating test for in-situ measurements of thermal transmittance of single family houses **Angela Sasic Kalagasidis – Paper #57** A simplified energy savings calculation aid in tool for the lifetime energy and environmental impact assessment of insulation materials **Mahabir Bhandari – Paper #95** Moisture-related durability of in-service high-R wall assemblies in Pacific Northwest climates **Jonathan Smegal – Paper #132**	**PRINCIPLES:** Whole Building Performance ***Chair: Katrin Klingenberg*** Using the thermal mass of a building to reduce the magnitude of the peak power demand of the primary heating system: A whole-building simulation with parametric analysis **Victor Fransson – Paper #107** Implementation and validation of a longwave heat exchange model **Florian Antretter- Paper #147** A new approach for analysis of complex building envelopes in whole-building energy simulations **Jan Kosny – Paper #151**
10:00 am	**Break (refreshments served), Lobby II**	

	Session 12 and Session 13	
	Ballroom – Beach/Gulf	*Ballroom – Palm/Bay*
10:30 am – 12:00 pm	**PRACTICES:** Low-Energy Buildings ***Chair: Chris Mathis*** Evaluation of energy efficiency of U.S. Army hard shelters: B-huts and SIP-hut **Som Shrestha – Paper #93** Building energy and envelope performance of a near net-zero energy building **Stanley Gatland – Paper #157**	**PRACTICES:** Building Envelope Performance Studies ***Chair: Benjamin Meyer*** High-Rise Wood Building Enclosures **Graham Finch – Paper #7** Guiding design teams by hygrothermal, energy and thermal comfort analysis while managing uncertainty **Ivan Lee – Paper #88** Case study: Over-cladding for thermal performance and building resiliency **Dan McKelvey – Paper #128**

12:00 pm	**Lunch (on your own)**
*1:00 pm – 5:00 pm	**Workshop 8** (Free event) US DOE and IEA Building Envelope Roadmap ***Ballroom, Beach***

**Refreshments served at 3:00 pm*

air barrier
abaa
association of
america

The Air Barrier Association of America (ABAA) was incorporated in the State of Massachusetts in 2001 and consists of stakeholders in the building enclosure industry. Such stakeholders include manufacturers, suppliers, distributors, architects, engineers, contractors, researchers, testing & audit agencies, consultants and building owners. ABAA is focused on leading the industry into the future in a progressive and professional manner. We are the national voice of the air barrier industry in America.

As state energy code requirements become more and more stringent; driven by factors such as greenhouse gas production, the need for more energy efficient heating and cooling systems, dwindling natural resources, the long term effects of mold and mildew and an ever more environmentally conscious public, ABAA's role as the National Voice of the air barrier industry is becoming increasingly apparent.

The association seeks to raise the standard of proficiency in the industry through the ABAA On-Site Quality Assurance Program, based on the principles outlined in ISO 9000. ABAA will continue to play a pivotal role in the education, lobbying and marketing of the industry to government, the professional community, building owners, utilities and other industry stakeholders. ABAA is also dedicated to furthering continuing education in the industry. ABAA offers premier training to installers, estimators, managers and administrators on the contractor side, as well as AIA accredited courses for design professionals.

www.airbarrier.org

1600 Boston-Providence Hwy, Walpole, MA 02081
P) 1-866-956-5888 F) 1-866-956-5819

ARMATHERM™
THERMAL BREAK SOLUTIONS

Armatherm is a thermal break material that significantly reduces the amount of energy lost from thermal bridging in structural steel and façade connections and improves building envelope performance by helping to meet ASHRAE 90.1 energy code compliance. Solutions are available for steel and concrete building designs. We are a collaborative, design-build partner who can assist in determining the extent of thermal bridging heat loss on building envelope performance including thermal modeling and design calculations.

Thermal bridging through steel and concrete framing can have a significant impact on a building's energy performance. Reducing heat flow within a building's thermal envelope reduces energy consumption as well as potential condensation issues. Armatherm FRR and Armatherm 500 can be used anywhere a penetration or transition exists in the building envelope creating a thermal bridge. Solutions using Armatherm to minimize heat loss include balcony, canopy, parapet, masonry shelf angle, cladding/Z-girt, curtain wall mullion connections and foundation/wall transitions. Heat loss due to thermal bridging can be reduced by as much as 80%, improving the effective U-value of wall assemblies.

www.armadillonv.com/index.php/thermal-breaks

USA Office

419 Sawyer Street
New Bedford, MA 02746
P) 800-580-3984

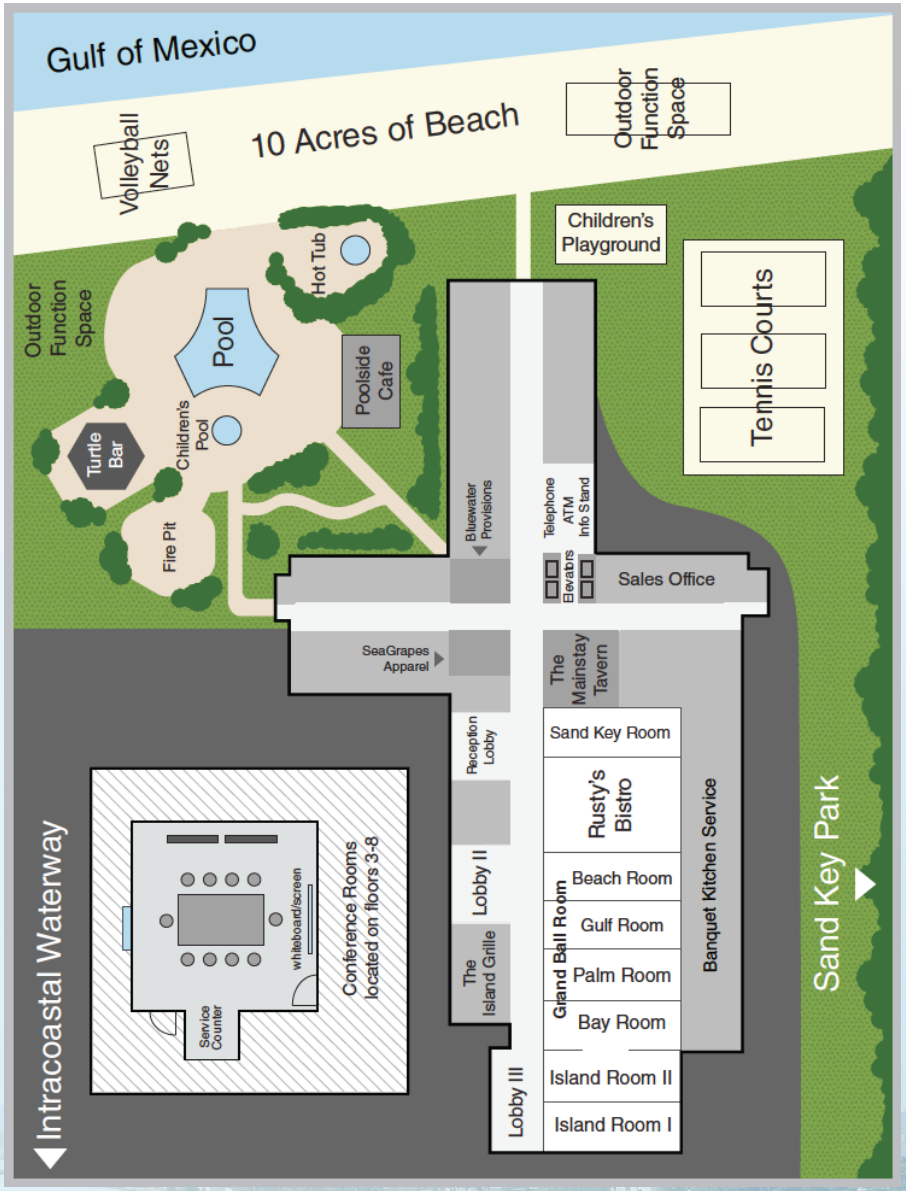
UK Office

Brighton Street
Shipley, West Yorkshire BD177EB
P) 01274-591115

Email: sales@armadillonv.com

Hotel Map

Sheraton Sand Key ❖ Clearwater Beach, Florida



Free Parking

Notes

Notes

Notes

Notes

BUILDINGS XIII
CONFERENCE